

Configure tracing using MeshConfig and Pod annotations

Users are encouraged to transition
to the Telemetry API for tracing
configuration.

advanced tracing options, such as sampling rate and adding custom tags to reported spans. Sampling is a beta feature, but adding custom tags and tracing tag length are considered in-development for this release.

Istio provides the ability to configure

Before you begin

- Ensure that your applications propagate tracing headers as described here.
- here.

 2. Follow the tracing installation guide located under Integrations based on your

preferred tracing backend to install the appropriate addon and configure your Istio proxies to send traces to the

tracing deployment.

Available tracing configurations

You can configure the following tracing options in Istio:

- 1. Random sampling rate for percentage of requests that will be selected for trace generation.
- 2. Maximum length of the request path after which the path will be truncated for reporting. This can be useful in limiting trace data storage specially if you're collecting traces at ingress gateways.
- 3. Adding custom tags in spans. These

tags can be added based on static literal values, environment values or fields from request headers. This can be used to inject additional information in spans specific to your environment.

There are two ways you can configure tracing options:

- $1. \ \ Globally \ via \ {\tt MeshConfig} \ options.$
- Per-pod annotations for workload specific customization.

In order for the new tracing configuration to take effect for either of these options you need to restart pods injected with Istio proxies.

Any pod annotations added for tracing configuration override global settings. In order to preserve any global settings you should copy them from global mesh config to pod annotations along with workload specific customization. In particular, make sure that the tracing backend address is always provided in the annotations to ensure that the traces are reported correctly for the workload

Installation

Using these features opens new

possibilities for managing traces in your environment.

In this example, we will sample all traces and add a tag named clusterID using the ISTIO_META_CLUSTER_ID environment variable injected into your pod. Only the first 256 characters of the value will be used.

```
$ cat <<EOF > ./tracing.vaml
apiVersion: install.istio.io/v1alpha1
kind: IstioOperator
spec:
  meshConfig:
    enableTracing: true
    defaultConfig:
      tracing:
        sampling: 100.0
        max_path_tag_length: 256
        custom tags:
          clusterID:
          environment:
            name: ISTIO META CLUSTER ID
E0F
$ istioctl install -f ./tracing.yaml
```

Using MeshConfig for trace settings

All tracing options can be configured globally via MeshConfig. To simplify configuration, it is recommended to create a single YAML file which you can pass to the isticctl install -f command.

```
cat <<'EOF' > tracing.yaml
apiVersion: install.istio.io/v1alpha1
kind: IstioOperator
spec:
meshConfig:
    enableTracing: true
    defaultConfig:
        tracing:
        sampling: 10
        custom_tags:
        my_tag_header:
        header:
        name: host
```

Using proxy.istio.io/config

samples/sleep.vaml:

annotation for trace settings

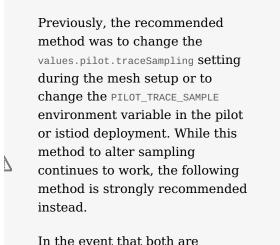
You can add the proxy.istio.io/config annotation to your Pod metadata specification to override any mesh-wide tracing settings. For instance, to modify the sleep deployment shipped with Istio you would add the following to

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: sleep
spec:
  template:
    metadata:
      proxy.istio.io/config: |
        tracing:
          sampling: 10
          custom tags:
            mv tag header:
               header:
                 name: host
    spec:
```

Customizing Trace sampling

The sampling rate option can be used to

control what percentage of requests get reported to your tracing system. This should be configured depending upon your traffic in the mesh and the amount of tracing data you want to collect. The default rate is 1%.



specified, the value specified in the MeshConfig will override any other setting.

To modify the default random sampling to

50, add the following option to your tracing.yaml file.

apiVersion: install.istio.io/v1alpha1

kind: IstioOperator

meshConfia:

spec:

```
enableTracing: true
defaultConfig:
tracing:
sampling: 50

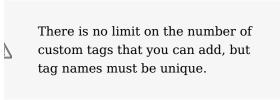
The sampling rate should be in the range of
```

The sampling rate should be in the range 0.0 to 100.0 with a precision of 0.01. For example, to trace 5 requests out of every 10000, use 0.05 as the value here.

Customizing tracing tags

Custom tags can be added to spans based on literals, environmental variables and client request headers in order to provide additional information in spans specific to

your environment.



You can customize the tags using any of the three supported options below.

1. Literal represents a static value that gets added to each span.

```
apiVersion: install.istio.io/v1alpha1
kind: IstioOperator
spec:
meshConfig:
enableTracing: true
defaultConfig:
tracing:
custom_tags:
my_tag_literal:
literal:
value: <VALUE>
```

Environmental variables can be used where the value of the custom tag is populated from a workload proxy environment variable.

```
apiVersion: install.istio.io/v1alpha1
kind: IstioOperator
spec:
  meshConfia:
    enableTracing: true
    defaultConfig:
      tracing:
        custom tags:
          my tag env:
            environment:
              name: <ENV_VARIABLE_NAME>
              defaultValue: <VALUE>
                                         # opti
onal
```



based on environmental variables, you must modify the istio-sidecar-injector

In order to add custom tags

ConfigMap in your root Istio

3. Client request header option can be used to populate tag value from an

system namespace.

incoming client request header.

```
apiVersion: install.istio.io/v1alpha1
kind: IstioOperator
spec:
    meshConfig:
    enableTracing: true
    defaultConfig:
        tracing:
        custom_tags:
        my_tag_header:
        header:
        name: <CLIENT-HEADER>
        defaultValue: <VALUE> # opti
onal
```

Customizing tracing tag length

By default, the maximum length for the request path included as part of the HttpUrl span tag is 256. To modify this maximum

length, add the following to your tracing.yaml file.

```
apiVersion: install.istio.io/v1alpha1
kind: IstioOperator
spec:
    meshConfig:
    enableTracing: true
    defaultConfig:
        tracing:
        max_path_tag_length: <VALUE>
```